

## Recommended knowledge in Cardiovascular and Metabolic Health

### Cardiovascular

- 1) Structure and function of the cardiovascular and lymphatic system ("Pathophysiology" Chap 31)
- 2) Alterations of cardiovascular function ("Pathophysiology" Chap 32)

#### References:

"Pathophysiology: The Biologic Basis for Disease in Adults and Children", 7<sup>th</sup> Edition (2015), By Kathryn L. McCance and Sue E. Huether. Publisher: Elsevier.

### Metabolism

- 1) Energy homeostasis
- 2) Regulation of body weight

#### References:

1. Book chapter

Dulloo AG. Energy balance and body weight homeostasis.

Chapter 6, Clinical Obesity in Adults and Children. 3rd edition; edited by Peter G. Kopelman, m Ian D. Caterson and William H. Dietz, Willey-Blackwell publishers, Sussex, UK, pp67-81

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2. Pubmed chapter article

Broskey NT, Johannsen D, Redman L. Regulation of Body Weight in Humans.

In: De Groot LJ et al. editors. Endotext [Internet]. South Dartmouth (MA): MDText.com, Inc.; 2000-. 2016 Feb 25. <http://www.ncbi.nlm.nih.gov/books/NBK278932/>

### Hypoxia

- 1) Hypoxia and oxygen sensing
- 2) Erythropoietin and erythrocytosis

#### References:

1. Wenger RH, Kurtcuoglu V, Scholz CC, Marti HH and Hoogewijs D (2015) Frequently asked questions in hypoxia research. *Hypoxia* 3, 35-43.
2. Bishop T and Ratcliffe PJ (2014) Signaling hypoxia by hypoxia-inducible factor protein hydroxylases: a historical overview and future perspectives. *Hypoxia* 2, 197-213.
3. Wenger RH and Hoogewijs D (2010) Regulated oxygen sensing by protein hydroxylation in renal erythropoietin-producing cells. *Am. J. Physiol. Renal. Physiol.* 298, F1287-F1296.

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## Recommended prerequisites/knowledge in Infection, Inflammation and Cancer

### Infection

- 1) Mechanisms of action of antibiotics
- 2) Biochemical and molecular mechanisms of resistance of antibiotics
- 3) Principle bacterial species responsible of infections for humans
- 4) Diagnostic techniques of bacteriology in clinical bacteriology

#### **References:**

Any Infection and Microbiology Book, e.g.

**Medical Microbiology: With STUDENTCONSULT online access, 18e (Greenwood, Medical Microbiology) 18th Edition** by David Greenwood BSc PhD DSc FRCPath (Editor), Richard C. B. Slack MA MB BChir FFPHM MRCPATH DRCOG (Editor), Michael R. Barer MBBS PhD FRCPath (Editor), Will L Irving (Editor)

**Series:** Greenwood, Medical Microbiology

**Paperback:** 794 pages

**Publisher:** Churchill Livingstone; 18 edition (August 6, 2012)

**Language:** English

**ISBN-10:** 0702040894

**ISBN-13:** 978-0702040894

### Inflammation (Immunology)

1. Concept of Inflammation
2. Innate Immunity
3. Acquired Immunity
4. Immune Cells
5. Immune Factors, including Cytokine, Chemokines,
6. Antigen Processing and Antigen Presentation
7. Concept of Danger Signals, including TOLL Receptors
8. Immune Organs, including Thymus, Spleen, Lymph nodes, Mucosa Associated Immune Tissue
9. Concept of Tolerance, Energy and Allergy
10. Concept of Vaccine
11. Concept of Memory

#### **References:**

Any Immunology Book, e.g.

Immunology at a Glance, 10th Edition

J. H. L. Playfair, B. M. Chain

ISBN: 978-0-470-67303-4

120 pages

Wiley-Blackwell

Cellular and Molecular Immunology, 8<sup>th</sup> Edition

A.K. Abbas, A.H. Lichtman, S. Pillai

ISBN: 978-0-323-22275-4

533 pages

Elsevier Saunders

## **Cancer**

1. The concept of genetic/epigenetic origin of cancer
2. The notion of clonal evolution of cancer
3. The main hallmarks of cancer
4. The notion of tumor – host interaction
5. The principle of the metastatic cascade
6. Some basic principles of therapy (chemo, radio, targeted, immuno)

### **References:**

#### **The Biology of Cancer (2nd edition)**

Robert A. Weinberg

Publisher: Garland Science

May 18, 2013

ISBN-10: 0815342209

Pages: 876

English

Available for free download: <http://www.aazea.com/book/the-biology-of-cancer-2nd-edition/#download>

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## Recommended knowledge in Neuroscience

1. Anatomical and functional organization of the nervous system
2. Neurons and glial cells: structural characteristics, general properties, main subtypes
3. Bases of neuronal excitability: resting membrane potential and action potentials
4. Synaptic transmission: types of synapses, neurotransmitters systems, synapses ultrastructure and function, synaptic integration
5. Bases of synaptic plasticity
6. Development and differentiation of the nervous system
7. Fundamentals of some essential brain functions: motor, autonomic, and cognitive (perception, memory, language, executive functions)
8. Basic principles of human neuroimaging (EEG and fMRI) and neurostimulation (TMS)

### **References:**

"Neuroscience: Exploring the Brain" by Bear et al. (4<sup>th</sup> ed, 2015).

Or

"Principles of Neural Science" by Kandel et al. (5<sup>th</sup> ed, 2012).

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